PREFACE

While taking up the problem of "Petrological and Geochemical Studies of the Ophiolite Belt in Parts of Chandel and Ukhrul Districts, Manipur and their Tectonic Significance" the author, for quite a long time, have been entangled with a number of puzzling features uncommon to most of the ophiolite sequences of the world, many of which are found not in agreement with the system of ideas as envisaged in the limited literatures of this part of the least explored ophiolite belt. Exposures of greater than 90% of the ultramafics sandwiched with pelagic shale; wide occurrence of huge exotic blocks of gritty sandstone of shallow water environment in the ophiolite mélange zone along with conglomerate of clasts of mostly of chert, limestone, and sandstone; absence of any plutonic basic rock having characteristic features of gabbro; occurrence of huge exotic blocks of certain kinds of rocks comprising of quartz and calcite, and entirely of clasts of calcite grains; pillow lavas with pieces of calcite crystals as large as 1-2cm diameter, extruded on the ocean floor where chert is being formed; felty textured greenish grains (which ultimately found out to be of uralite) intergranular to the plagioclase laths, in the dyke and sill rocks; are some of the enigmatic features, which compelled to go for extensive review of literature in due course of pondering for working out a scheme of a different setting other than that of the mid-oceanic ridge, which can explain all these phenomena in agreement not only with the geological and tectonic setting of the region in relation with the orogenesis and evolution of the Indo-Myanmar Hill Ranges, but also with the chemical fingerprints of the ophiolitic rocks.

The present work is devoted to provide a comprehensive account and critical analysis of the field, petrological and geochemical data of the different units of the ophiolite suite, so as to throw some light on the mechanism of rifting and conditions of the generation of the ophiolitic rocks in the process of crustal stretching as well as
the domain of the compression tectonics by virtue of which the present setting of Manipur Ophiolite Melange Zone is developed in due course of the orogenesis of the Indo-Myanmar Hill Ranges. The main contents of this volume describing various aspects of the Ophiolite Belt in Manipur are in the form of 7 consequent chapters, the conglomeration of which tries to elucidate the best possible picture about the petro惑tectoic events responsible for the evolution of the present day field setting. Numerous cross-references link factual or descriptive material in one chapter with theoretical concepts in another. The concept of ophiolite with an illustration of the graceful contours developed around Land, People, Climate, Geomorphology, Flora and Fauna of Manipur (Chapter I) gives an introduction to this volume. From the facts of i) Field setting of the Ophiolite Melange Zone (Chapter 2), ii) The sub-continental upper mantle material of Spinel-lherzolite source origin of the harzburgitic and lherzolitic ultramafics (Chapter 3), iii) Extensive serpentinitisation with volume expansion during spreading regime owing to continued diapirc upwelling of the ultramafics almost upto the ocean floor, even after partial melting died out (Chapter 4), iv) Alkalic basalt lineage of the melts derived from partial melting of the host ultramafics at a temperature range of 1185-1350°C and pressure range of 8-15 Kb, at a slow spreading tectonic regime with no considerable magma chamber where gabbro can be formed and later spilitic metamorphism of the dyke and sill rocks crystallized from the melts (Chapter 5) and v) Extrusion of the basaltic melt along with a melt of calcite derived from the extraction of Ca from feldspar on account of spilitic metamorphism of dyke and sill rocks within the newly formed chert in an ocean basin, the approximate depth of which may range 2000-3000 m (Chapter 6); it is quite reasonable to arrive at a conclusion that processes of passive rifting of the continental margin of the Myanmar (South-East Asian) plate, must have preceded formation of an ocean basin (the Indo-Myanmar Basin?) where the formation of the ophiolitic rocks in a slow spreading centre took place, subsequent obduction of which in due course of tectonic inversion led to give rise to the present setting of the Mélange Zone along with the orogenesis and evolution of the Indo-Myanmar Hill Ranges (Chapter 7).

The petrological and geochemical accounts of the Ophiolite Belt in Manipur based on the tectonic perspectives provided in the present work may not be complete in itself. As J.S. Huxley also rightly said 'advance in science comes by laying brick by
brick, not by sudden erection of fairy palaces’ the ideas given in this work may be improved, modified or refined by the future workers. However, the framework presented entirely with a new conception about the Ophiolite of Manipur in this volume may form a turning point for future research particularly in areas, which are within the domain of Ophiolite and Tectonics of the Indo-Myanmar Hill Ranges.

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